

What Is Claimed Is:

1. A battery-powered light source device for an endoscope, comprising a DC/DC converter having:

a comparator for comparing the output voltage supplied to a light source lamp with a specific reference voltage; and

an adjuster circuit for adjusting the output voltage supplied to the light source lamp on the basis of the comparison result of the comparator so that a specific lamp voltage will be achieved; wherein

said DC/DC converter raises or lowers the power supply voltage of an internal battery and supplies the raised or lowered power supply voltage to the light source lamp that generates illuminating light supplied to an endoscope, on the basis of the output signal of the adjuster circuit.

2. The battery-powered light source device for an endoscope according to Claim 1, having a power supply circuit comprising the DC/DC converter, a coil that stores as energy the electrical power supplied from the battery through the switching operation of this DC/DC converter, a first capacitor that absorbs noise from the power generated by the switching operation of the DC/DC converter, a diode that releases the energy stored in the coil as electrical energy to the light source lamp side, a feedback component for sending feedback to

the DC/DC converter, and a second capacitor that absorbs ripple noise from the power released from the diode.

3. The battery-powered light source device for an endoscope according to Claim 1,

wherein the DC/DC converter is equipped with one or more switching elements, and the one or more switching elements carry out the switching operation under the control of the adjuster circuit.

4. The battery-powered light source device for an endoscope according to Claim 2,

wherein the feedback component is equipped with a plurality of potential resistors, and the voltage fed back to the DC/DC converter is divided by the plurality of potential resistors.

5. The battery-powered light source device for an endoscope according to Claim 2,

wherein the power supply circuit constitutes a step-up circuit which connects the coil and the diode anode and connects the switching-side circuit of the DC/DC converter to the connection point of the coil and the diode, thereby stepping up the power supply voltage of the internal battery.

6. The battery-powered light source device for an endoscope according to Claim 2,

wherein the power supply circuit constitutes a step-down circuit which connects the coil and the diode cathode and connects the switching-side circuit of the DC/DC converter to the connection point of the coil and the diode, thereby stepping down the power supply voltage of the internal battery.

7. The battery-powered light source device for an endoscope according to Claim 3,

wherein the adjuster circuit has a modulator that varies the times at which the switching element is turned on and off on the basis of the comparison result of the comparator.

8. The battery-powered light source device for an endoscope according to Claim 4,

wherein the power supply circuit has a change-over switch for switching the potential resistors.

9. The battery-powered light source device for an endoscope according to Claim 4,

comprising a battery component that holds a plurality of the batteries,

wherein the power supply circuit has a change-over switch that connects the plurality of batteries held in the battery component to the DC/DC converter either in series or

independently, and a linked switch for switching the potential resistors in conjunction with this change-over switch.

10. The battery-powered light source device for an endoscope according to Claim 4,

wherein at least one of the plurality of potential resistors is a variable resistor with which the potential resistance can be varied.

11. The battery-powered light source device for an endoscope according to Claim 4,

wherein the power supply circuit is equipped with a capacitor and a push switch connected in parallel to the feedback component, and this push switch is used to cause the light source lamp to flash brightly for a specific length of time up until the charging of the capacitor is complete.

12. The battery-powered light source device for an endoscope according to Claim 7,

wherein the adjuster circuit is equipped with an oscillator that generates a reference clock signal,

and the modulator modulates the pulse width by being set by the reference clock signal of the oscillator and being reset by the comparison result of the comparator.

13. The battery-powered light source device for an endoscope according to Claim 7,

wherein the adjuster circuit is equipped with an oscillator that generates a reference clock signal,

and the modulator modulates the frequency by being set by the reference clock signal of the oscillator and being reset by the comparison result of the comparator.

14. The battery-powered light source device for an endoscope according to Claim 8,

wherein the power supply circuit is equipped with a current detection circuit for detecting current flowing to the light source lamp, and

the change-over switch is controlled by the current value detected by the current detection circuit.

15. The battery-powered light source device for an endoscope according to Claim 14,

wherein the current detection circuit identifies the type of light source lamp from the detected current value, and controls the change-over switch.

16. The battery-powered light source device for an endoscope according to Claim 14,

wherein the current detection circuit detects the lamp voltage from the detected current value, and has a comparator

that compares this detected lamp voltage to a reference voltage, and a control circuit that controls the change-over switch on the basis of the comparison result of this comparator.

17. The battery-powered light source device for an endoscope according to Claim 1,

wherein a current limiting circuit that limits the start-up current supplied to the light source lamp is provided between the DC/DC converter and the light source lamp.

18. The battery-powered light source device for an endoscope according to Claim 1,

having a detection circuit for detecting the remaining charge of the battery, and notification circuit for notifying of the remaining charge of the battery based on the detection result of the detection circuit.

19. The battery-powered light source device for an endoscope according to Claim 1,

having a lamp type detection circuit for detecting the type of the light source lamp,

wherein the adjuster circuit varies the output voltage supplied to the light source lamp according to the type of light source lamp as detected by the lamp type detection circuit.

20. The battery-powered light source device for an endoscope according to Claim 1,  
having a detection circuit for detecting the remaining charge of the battery,

wherein the adjuster circuit outputs a adjusting signal that causes the light source lamp to flash on the basis of the detection result of the detection circuit.

21. The battery-powered light source device for an endoscope according to Claim 19,

wherein the lamp type detection circuit is a lamp shape detection circuit for detecting the shape of the light source lamp, provided to the mounting component of the light source lamp; and

the adjuster circuit varies the output voltage supplied to the light source lamp according to the type of the light source lamp detected by the lamp shape detection circuit.

22. The battery-powered light source device for an endoscope according to Claim 1,

having a detection circuit for detecting the remaining charge of the battery,

wherein the adjuster circuit has a protection circuit that decreases the output of the DC/DC converter according to the detection result of the detection circuit.

23. The battery-powered light source device for an endoscope according to Claim 2,

having a detection circuit for detecting the remaining charge of the battery, and a warning control circuit that outputs a control signal for turning the switching element on and off on the basis of the detection result of this detection circuit.

24. The battery-powered light source device for an endoscope according to Claim 22,

wherein the protection circuit has a notification circuit that notifies of the remaining battery charge before the output of the DC/DC converter is decreased.

25. The battery-powered light source device for an endoscope according to Claim 1,

having a detection circuit for detecting the remaining charge of the battery,

wherein the adjuster circuit supplies voltage to the illuminating lamp at a first power level when it is detected from the detection result of the detection circuit that the remaining battery charge is a first remaining charge state, and supplies voltage to the illuminating lamp at a second power level when it is detected from the detection result of



the detection circuit that the remaining battery charge is a second remaining charge state.

26. The battery-powered light source device for an endoscope according to Claim 2,

having a timer for measuring a specific length of time from the start-up of the power supply circuit, and a switching element for cutting off the path over which power is supplied from the power supply circuit to the light source lamp;

wherein the switching element is turned on after the timer indicates that the specific time has elapsed.

27. The battery-powered light source device for an endoscope according to Claim 2,

having a timer for measuring a specific length of time from the start-up of the power supply circuit, a resistor for limiting the current that supplies power from the power supply circuit to the light source lamp, and a switching element for short-circuiting the resistor;

wherein the switching element is turned on after the timer indicates that the specific time has elapsed.